



SECOND FIVE YEAR REVIEW REPORT
ALBION-SHERIDAN TOWNSHIP LANDFILL SUPERFUND SITE

Albion
Calhoun County, Michigan

August 2007

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Table of Contents

List of Acronyms	iv
Executive Summary	v
Five Year Review Summary Form	vi
1.0 INTRODUCTION	1
2.0 SITE CHRONOLOGY	2
3.0 BACKGROUND	2
3.1 Physical Characteristics	2
3.2 Land and Resource Use	3
3.3 History of Contamination	3
3.4 Initial Response.....	3
3.5 Basis for Taking Action.....	3
4.0 REMEDIAL ACTIONS.....	5
4.1 Remedy Selection	5
4.2 Remedy Implementation.....	6
4.3 Institutional Controls	7
4.4 System Operations/Operation and Maintenance (O&M)	10
5.0 PROGRESS SINCE LAST FIVE YEAR REVIEW	11
6.0 FIVE YEAR REVIEW PROCESS.....	12
6.1 Administrative Components	12
6.2 Community Notification and Involvement.....	12
6.3 Document Review.....	13
6.4 Data Review.....	13
6.5 Site Inspection.....	14
7.0 TECHNICAL ASSESSMENT	15
7.1 Question A: Is the remedy functioning as intended by the decision documents?	15
7.2 Question B: Are the assumptions used at the time of remedy selection still valid? ...	17
7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?	17
8.0 ISSUES	17
9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS.....	18
10.0 PROTECTIVENESS STATEMENT(S).....	19
11.0 NEXT REVIEW	20

Attachments

Figure 1	Site Location Map
Figure 2	Site Base Map
Figure 3	Site IC Area Map
Figure 4	Site IC Area Map
Attachment 1	List of Documents Reviewed
Attachment 2	Five Year Review Advertisement

Tables

Table 1	Chronology of Site Events
Table 2	Institutional Control Areas
Table 3	Annual System Operations/ O&M Costs
Table 4	Actions Taken Since Last Five Year Review
Table 5	Identified Issues that Impact Protectiveness
Table 6	Recommendations and Follow-up Actions

Acronyms

Agencies	MDEQ and U.S. EPA	PRP	Potentially Responsible Party
ARARs	Applicable or Relevant and Appropriate Requirements	RA	Remedial Action
CFR	Code of Federal Regulations	RD	Remedial Design
FS	Feasibility Study	RI	Remedial Investigation
gpm	gallons per minute	RI/FS	Remedial Investigation/ Feasibility Study
IC	Institutional Control	ROD	Record of Decision
MCL	Maximum Contaminant Level	Site	Albion-Sheridan Township Landfill Superfund Site
MDEQ	Michigan Department of Environmental Quality	UAO	Unilateral Administrative Order
MDNR	Michigan Department of Natural Resources	U.S. EPA	United States Environmental Protection Agency
mg/kg	milligrams per kilogram	UU/UE	Unrestricted Use/ Unlimited Exposure
NCP	National Contingency Plan		
NPL	National Priorities List	µg/L	micrograms per Liter
O&M	Operation and Maintenance	VES	Vapor Extraction System
ppb	parts per billion	VOCs	Volatile Organic Compounds
ppm	parts per million		

Executive Summary

The current five year review confirms that the Albion-Sheridan Township Landfill Superfund Site remedy remains effective, and there are no known exposure pathways that result in unacceptable health risks at the Site. The components of the Site remedy selected in the 1995 ROD have been implemented and remain in place under the terms of the 1999 Consent Decree and the Environmental Protection Easement and Declaration of Restrictive Covenants. The Site Restrictive Covenants will be analyzed to benefit from any pertinent Michigan environmental restrictive covenant statutes.

The remedy is currently protective of human health and the environment and the remedy is functioning as intended. There is no evidence of a cap breach and the existing use of the Site property is consistent with the objectives of the landfill cap and land use restrictions. The groundwater remedy is currently protective of human health because there is no evidence of groundwater use in the area of the plume above the 10 ppb arsenic MCL, and the plume is being monitored annually under the operation & maintenance program. Long term protectiveness requires compliance with land and groundwater use restrictions that prohibit interference with the solid waste cap; prohibit residential, commercial or any other use that would allow the continued presence of human exposure, and restrict use of groundwater until groundwater cleanup standards are achieved throughout the plume area.

Due to the fact that in 2006 U.S. EPA finalized a revised arsenic standard, reducing the drinking water MCL from 50 ppb to 10 ppb, the arsenic plume is larger than before, and now extends beyond the southern Site boundary across Erie Road to the North Branch Kalamazoo River. Historic Site arsenic levels in groundwater are well below the groundwater surface water interface standard for the North Branch Kalamazoo River. This area south of the Site that overlies the 10 ppb plume is comprised of a parcel owned by a railroad and a wooded area owned by a private party. There are no known recorded property restrictions regarding the groundwater south of the Site. Therefore, even though no known inappropriate groundwater uses are occurring, restrictive covenants or a local ordinance preventing use of groundwater are planned to be required for the two properties south of the Site which overlie the 10 ppb arsenic plume, to assure that the remedy continues to function as intended. Certain property at the Site is owned by the State of Michigan. Land and groundwater use restrictions are not yet in place for this property. U.S. EPA intends to work with local government authorities, the PRPs and the State of Michigan to ensure that land and groundwater use is appropriately restricted. Such restrictions may take the form of a restrictive covenant or land use ordinance, and would need to be approved by the State of Michigan.

U.S. EPA completed the cap in 1999, and the PRPs continue to conduct long-term maintenance of the Site; landfill solid waste cap, with flexible membrane liner, to ensure containment of Site waste material. A security perimeter fence restricts Site access and use. Arsenic concentrations are the primary concern regarding the groundwater; the Site monitoring well network has properly identified the historic arsenic levels in the groundwater throughout the plume area, and currently seems adequate to properly monitor the extent of the groundwater arsenic plume. The PRPs should continue to use groundwater modeling to support monitoring in locating the extent and nature of the arsenic plume.

Five Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Albion-Sheridan Township Landfill Superfund Site		
EPA ID (from WasteLAN): EPA ID# MID980504450		
Region: 5	State: MI	City/County: Albion, Calhoun
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Construction completion date: 09/28/ 1999	
Has site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Jeff Gore		
Author title: Remedial Project Manager	Author affiliation: U.S.EPA, Region 5	
Review period: 10 / 11 / 2006 to August 2007		
Date(s) of site inspection: 11 / 13 / 2006		
Type of review: <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
Review number: <input type="checkbox"/> 1 (first) <input checked="" type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA Onsite Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# NA <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 09 / 06 / 2002		
Due date (five years after triggering action date): 09 / 06 / 2007		

Issues:

- A new arsenic groundwater trend and IC analysis is needed at the Site.
- Due to the reduction in the MCL for arsenic, the plume is now larger than U.S. EPA previously contemplated. For that reason, two properties south of the Site overlie the plume and are not subject to any restrictive covenants regarding groundwater.
- Certain parcels at the Site, owned by the State of Michigan, are not yet subject to appropriate land or groundwater use restrictions.

Recommendations and Follow-up Action

- A new multi-year trend analysis for arsenic in the O&M reports to take into account the new unfiltered sampling method, the 10 ppb MCL for arsenic, groundwater/ surface water interface, and future groundwater sampling results will be initiated by April 2008. ICs will also be monitored annually for certification.
- Work with property owners to implement appropriate restrictive covenants restricting groundwater usage for the two impacted properties south of the Site. Alternatively, work with local government authorities if necessary to enact a local groundwater use restriction ordinance.
- U.S. EPA will be working with the PRPs and MDEQ to ensure that the existing declaration of restrictions is consistent with any pertinent Michigan environmental restrictive covenant statutes, case law development and any available legal interpretations. If revisions to the existing restrictive covenants are necessary, U.S. EPA will work with the PRPs and MDEQ to ensure that revised restrictive covenants, if necessary, are implemented. U.S. EPA will also work with local government authorities, the PRPs and the State of Michigan to ensure that land and groundwater use on State-owned property is adequately restricted. Such a restriction may take the form of a land use ordinance, which would need to be approved by the State of Michigan, or a restrictive covenant.

Protectiveness Statement:

The remedy is currently protective of human health and the environment, and the remedy is functioning as intended. There is no evidence of a cap breach and the existing use of the Albion-Sheridan Landfill Site property is consistent with the objectives of the landfill cap and land use restrictions. The groundwater remedy is currently protective of human health because there is no evidence of groundwater use in the area of the plume above the 10 ppb arsenic MCL, based on current and historic sampling of Site monitoring and residential groundwater wells. Long term protectiveness requires compliance with land and groundwater use restrictions that prohibit interference with the solid waste cap; prohibit residential, commercial or any other use that would allow the continued presence of human exposure; and restrict use of groundwater until groundwater cleanup standards are achieved throughout the plume area.

Due to the fact that in 2006 U.S. EPA finalized a revised arsenic standard, reducing the drinking water MCL from 50 ppb to 10 ppb, the arsenic plume is larger than before, and now extends beyond the southern Site boundary across Erie Road to the North Branch Kalamazoo River. Historic Site arsenic levels in groundwater are well below the groundwater surface water interface standard for the North Branch Kalamazoo River. This area south of the Site that overlies the 10 ppb plume is comprised of a parcel owned by a railroad and a wooded area owned by a private party. Therefore, even though no known inappropriate uses of groundwater are occurring, restrictive covenants or a local ordinance preventing the use of groundwater are planned to be required for the two properties south of the Site which overlie the 10 ppb arsenic plume, to assure that the groundwater remedy continues to function as intended.

1.0 INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the Albion-Sheridan Landfill Superfund Site in Albion, Michigan. U.S. EPA conducted the review between October 2006 and August 2007. This report documents the results of the five-year review. The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. Five year review reports document the methods, findings, and conclusions of the review, as well as identifying issues found during the review, if any, and making recommendations to address them.

This review is required by statute. U.S. EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA § 121(c), as amended, when:

If a remedial action is selected that results in any hazardous substances, pollutants, or contaminants remaining at the site, the remedial action shall be reviewed no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the second five-year review for the Albion-Sheridan Landfill Superfund Site. The first five-year review report was completed and signed in September 2002.

2.0 SITE CHRONOLOGY

Table 1. Chronology of Site Events	
Date	Event
1986	Initial discovery of waste management problems at the Site by the U.S. EPA Field Investigation Team.
June 1988	U.S. EPA proposes Albion-Sheridan Site for NPL
October 1989	NPL final listing for the Albion-Sheridan Site.
1990	Surface drum removal based on UAO.
January 1992	Remedial Investigation/ Feasibility Study initiated.
1995	Remedial Investigation/ Feasibility Study completed.
March 1995	Record of Decision signed.
December 1995	Remedial Design start based on UAO.
September 1997	Remedial Action start.
July 1999	RD/RA Consent Decree completed.
September 1999	Site remedy construction completion
October 2000	Landfill erosion repair completed.
May 2001	Final inspection of landfill repair work.
June 2001	Additional gas probe & monitoring wells installed.
September 2002	First five-year review completed.
February 2005	Trend analysis for arsenic in groundwater.
January 2006	10 ppb USEPA arsenic groundwater MCL is final.

3.0 BACKGROUND

3.1 Physical Characteristics

The Albion-Sheridan Township Landfill Site is a closed landfill located at 29975 East Erie Road, approximately one mile east of Albion, Michigan, on the eastern edge of Calhoun County (See Site figure). The City of Albion has a population of approximately 10,000. The area incorporating the landfill occupies about 18 acres of land. A larger area enclosed by the Site security fence is approximately 50 acres in size, and includes land to the west and north. A surface water runoff retention basin is located on the western land, and the land in the northern end includes a small wooded area.

3.2 Land and Resource Use

The Site is surrounded by a combination of residential, agricultural, commercial and industrial properties. Five residences are located approximately 1000 to 1500 feet southwest of the landfill along East Erie Road. Several residences and commercial businesses are located along Michigan Avenue about 500 feet north of the Site fence. Housing developments are located to the east and west of the Albion Site, and undeveloped land formally used for agriculture is immediately west of the Site. An active railroad track borders East Erie Road to the south of the landfill, and beyond the railroad tracks there is a wooded area that includes the North Branch of the Kalamazoo River. South of the river is agricultural land. The Site does not fall within the flood plain of the river.

3.3 History of Contamination

The Albion-Sheridan Site had been used as a sand and gravel pit and also used for open, non-permitted dumping for an unspecified period of time prior to 1966. Mr. Gordon Stevick privately operated the landfill from 1966 to 1981. The landfill accepted municipal refuse and industrial wastes from households and industries in the City of Albion and nearby townships. In the early 1970s, the Michigan Department of Natural Resources (MDNR) approved the landfill to accept an estimated 6,000 cubic yards of metal plating sludges. Other materials such as paint wastes and thinners, oil and grease, casting sand, and dust, sand and dirt containing fly ash were also disposed of at the Albion-Sheridan Landfill. The sludges remained buried at the Site. The landfill ceased operation in 1981.

3.4 Initial Response

In 1986, a U.S. EPA Field Investigation Team (FIT) contractor performed a site screening inspection to score the Site for the Hazardous Ranking System (HRS). In 1988, U.S. EPA proposed that the Site be included on the National Priorities List (NPL), and in 1989 Albion-Sheridan was officially placed on the NPL and designated a Superfund Site. During 1988 and 1989, a U.S. EPA technical team observed surface debris on the landfill, including drums which appeared to contain grease and paint waste. Some of the waste was classified as RCRA hazardous waste for toxicity and ignitability. Certain waste samples contained VOCs including ethylbenzene, toluene, tetrachloroethylene, 1,1,1-trichloroethane and xylene.

On March 19, 1990, U.S. EPA issued a unilateral administrative order (UAO) to five potentially responsible parties (PRPs) stating that a removal action was appropriate for the Site. The UAO was amended on May 3, 1990, to delete one of the PRPs. Two of the PRPs performed the removal of an estimated 46 drums from the landfill surface later in 1990. Twenty-two drums were overpacked and sent to an off-site facility for incineration. The remaining 24 drums were crushed and sent to a Type 2 Solid Waste Landfill in the State of Michigan.

3.5 Basis for Taking Action

U.S. EPA began remedial planning as the Site was proposed for the National Priorities List on June 24, 1988. The Site became a final NPL listing on October 4, 1989.

A remedial investigation (RI) was carried out from January 1992 to April 1994. The major results of the RI, and the conditions at the Site at that time found:

- The thickness of the existing landfill cover was between one and four feet. The minimum cover thickness for a closed landfill in the State of Michigan required at least two feet.
- Refuse material was found scattered on the ground surface throughout the area of the landfill. The cover had undergone significant revegetation since landfilling had stopped, consisting mainly of grass with some patches of small trees. The thickness of the fill material in the landfill ranged from 16 to 35 feet.
- The geology of the Site was characterized by approximately 20 to 54 feet of glacial sediments overlying sedimentary bedrock. There were no obvious clay confining layers beneath the Site, although discontinuous layers containing silt and/or clay did exist, creating an unconsolidated sediment aquifer. The uppermost bedrock beneath the Site was generally encountered at an approximate elevation of 935 to 925 mean sea level (MSL).
- Groundwater beneath the Site was contained within the unconsolidated sediment aquifer, which was encountered at depths of 10 to 30 feet below ground surface, and the bedrock aquifer. The direction of groundwater flow in the unconsolidated unit was west-southwest near the landfill and curved in a more southerly direction near the North Branch of the Kalamazoo River.
- Several VOCs, SVOCs and pesticides/PCBs were present in landfill waste samples, although many of them were found in estimated concentrations below the detection limit. 4-methyl phenol was the most concentrated contaminant at 15 mg/kg. A number of inorganic substances were present above background soil levels including antimony, arsenic, chromium, copper, lead, mercury and zinc. The highest levels included lead at 208 mg/kg, arsenic at 13 mg/kg and chromium at 13 mg/kg.
- Test pitting revealed one area of the landfill which contained an estimated 200-400 drums. Sampling results showed some of the drums contained liquids, solids and suspected paint sludges; contaminant concentrations included levels up to 730,000 ppm 1,2,4-trimethyl benzene, 6500 ppm acetone, 2400 ppm aluminum and 3 ppm arsenic.
- Groundwater samples taken at 13 monitoring wells surrounding the landfill revealed only one organic compound above the MCL, 1,2-dibromo-3-chloropropane. No SVOCs were detected above background concentrations. Arsenic, ammonia-nitrogen, cobalt, iron, manganese and nitrate/nitrite were detected above background, and antimony and nitrate exceeded established MCLs at two well locations.

U.S. EPA and MDNR prepared a ROD in March of 1995 which outlined the elements of a comprehensive remedy at the Site. In July of 1999, U.S. EPA, the City of Albion, and other PRPs signed a Consent Decree and had it entered in U.S. District Court.

4.0 REMEDIAL ACTIONS

4.1 Remedy Selection

The objective of the selected remedy is to reduce the risks associated with exposure to the contaminated materials on-site; to eliminate or reduce migration of contaminants to the groundwater, and to reduce the risks associated with arsenic contamination in the groundwater.

The major components of the Albion-Sheridan Landfill Site remedy involved implementation of the following:

- Removal, off-site treatment, and disposal of the drums which contained hazardous or liquid wastes, as well as other drums encountered during grading of the landfill surface.
- Construction of a solid waste landfill cover which made use of a Flexible Membrane Liner (FML) over the entire landfill mass.
- Design studies to determine if a passive venting or active landfill gas collection system should be installed at the Albion-Sheridan Site.
- Monitoring of groundwater to ensure effectiveness of the remedial action in lowering the arsenic concentration in groundwater through natural oxidation.
- Institutional controls on landfill property to limit both land and groundwater use, and controls on adjacent property to limit groundwater use until the clean-up standard is attained.

The ROD also allowed for a contingent remedy for groundwater treatment if residential wells became at risk of contamination: treatment of groundwater by in-situ oxidation if, five years after landfill cap installation, the arsenic contamination in the groundwater is not declining at the specified rate or if contamination threatened residential wells as outlined in the ROD.

The contingent remedy was based on a statistical evaluation to be performed on arsenic concentrations in the monitoring wells five years from the completion of the construction of the landfill cap. The statistical test was designed to determine if arsenic was declining sufficiently to fall below 50 ppb within 15 years. This statistical test was completed in the Hull & Associates February 2005 Annual Report on groundwater quality, and confirmed that the historic five year arsenic data and future trend supported the current remedy of natural oxidation of arsenic in groundwater. Since the 10 ppb MCL for arsenic became final in

2006, a new multi-year trend analysis for arsenic in groundwater is planned to confirm the effectiveness of the current remedy of natural oxidation of arsenic in groundwater.

4.2 Remedy Implementation

U.S. EPA issued Special Notice letters on June 6, 1995, to the private party PRPs associated with the Site. Four PRPs were offered the opportunity to undertake the remedial design and remedial action (RD/RA) during negotiations in the summer of 1995. Negotiations failed, however, and U.S. EPA issued a Unilateral Administrative Order (UAO) to four PRPs requiring them to conduct the RD/RA. Two of the PRPs, Cooper Industries and Corning, Inc. (hereinafter "RD/RA PRPs") complied with the UAO, and retained a contracting consultant firm in March of 1996 to assist them with Site activities.

The RD/RA PRP contractor received approval from U.S. EPA for a RD Work Plan in August of 1996. They completed the RD for the Site in August of 1997, and U.S. EPA approved the RA Work Plan in September of 1997.

From December of 1997 through September of 1998, the PRP contractor conducted the RA at the Site, excavating and disposing of located drums, installing and abandoning monitoring wells, and removing an on-site underground storage tank. In 1999, the contractor installed a permanent Site perimeter fence and constructed the new landfill cover. Components of the multi-layer landfill included:

- **Fill Layer:** The fill layer consists of six inches of graded cover fill placed over the landfill waste.
- **Gas Collection Layer:** This layer consists of a 12-inch thick sand layer on top of the existing waste mass and fill layer.
- **Flexible Membrane Liner (FML):** The FML consists of a layer of linear low density polyethylene (LLDPE). Textured FML was placed along the south end of the landfill with the steepest slope, and smooth FML was placed over the remaining portion of the landfill. The FML panels were joined by a fusion weld.
- **Drainage Layer:** A geocomposite drainage net, which consists of a layer of geonet between layers of geotextile, was installed on top of the FML.
- **Cover Soil Layer:** An 18-inch thick cover soil layer was installed over the entire landfill cap. There was no compaction requirement for the cover soil layer.
- **Topsoil Layer:** A minimum of six inches of top soil was installed over the cover soil layer and fertilized.
- **Vegetative Cover:** Native plant species seeding was used to establish a vegetative cover to control erosion.

A RD/RA Consent Decree (CD) was finalized and entered in U.S. District Court in July of 1999. The RD/RA CD brought in the PRPs Decker Corp. and the City of Albion, Michigan to join with RD/RA PRPs. The CD required Decker and the City of Albion (hereinafter "O&M PRPs") to implement all operation and maintenance activities at the Site, while the RD/RA PRPs were responsible for the RD and RA construction.

RA construction activities officially concluded in September of 1999 with the completion and signing of the Preliminary Completion Report for the Albion-Sheridan Site.

4.3 Institutional Controls

ICs are also required by the ROD to maintain the integrity of the remedy. ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination and that protect the integrity of the remedy. ICs are required to assure the long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

The 1995 ROD included measures requiring the use of institutional controls on landfill property to limit both land and groundwater use, and to limit groundwater use on adjacent property until the clean-up standard is attained. U.S. EPA published the revised arsenic MCL in 2006. The PRP contractor completed a review study of the Albion-Sheridan Landfill Site ICs as agreed to in the November 6, 2006, Notification of Agreement to Perform Institutional Controls Study. The PRP contractor provided the IC study memo, associated maps and Declaration of Restrictive Covenants to the U.S. EPA project manager and staff attorney in April 2007, which are available in the Site repository.

IC evaluation activities documented in the April 2007 IC study have determined that required ICs have been implemented on the source property owned by CDC Associates to protect against uses of the landfill and groundwater that are inconsistent with the selected remedy. IC evaluation activities have revealed that ICs have not been implemented on the source property owned by the State of Michigan, or for the groundwater which exceeds 10 ppb for arsenic (which does not allow for UU/UE) on two properties south of the Site. The respective ICs are discussed herein.

The Site is fenced and locked to control access. The Site property is owned by both the State of Michigan and CDC Associates, one of the PRPs. CDC Associates recorded a Declaration of Restrictive Covenants with Calhoun County in 1999 that limits land use and prohibits groundwater use on its property, and groundwater use on associated adjacent Site property. Since the U.S. EPA MCL for arsenic of 10 ppb became final in 2006, a new multi-year statistical trend analysis for arsenic in groundwater is planned to confirm the effectiveness of the current remedy of natural oxidation of arsenic in groundwater. Incorporating the lower 10 ppb MCL, the arsenic plume now extends beyond the southern Site boundary across Erie Road to the North Branch Kalamazoo River and impacts two parcels. One property parcel south of the Site is owned by the Norfolk & Southern Railroad, and the other is a wooded area owned by a private party (See Site figures). There are no known recorded property restrictions regarding the groundwater south of the Site. Residential well RW-04 located west of the Site along Erie Road continues to remain outside of the arsenic groundwater

plume, with historical sample results always below the 5 ppb detection limit. Future operation and maintenance annual reports for the Albion-Sheridan Landfill will include compliance information regarding institutional controls for the Site.

The areas listed below require ICs in order to protect the integrity of the Site remedy.

Table 2. Institutional Controls Summary Table		
Media, Engineered Controls & Areas that Do Not Support UU/UE on Current Conditions	IC Objective	IC Instrument Implemented or planned
Site boundary/ Site area (~50 acres): On site soil multi-media landfill cap and adjacent stormwater retention basin. Property owned by CDC Associates.	Prohibits use of landfill cap land, groundwater underlying Site, and assures integrity of landfill & other RA components.	Declaration of Restrictive Covenant recorded (liber-2136, page-992) at Calhoun County recorder's office on June 21 1999, pursuant to Michigan Code R. 299.610 (e).
Site boundary/ Site area (~50 acres): On site soil multi-media landfill cap and adjacent stormwater retention basin. Property owned by the State of Michigan .	Prohibits use of landfill cap land, groundwater underlying Site, and assures integrity of landfill & other RA components.	Planned restriction may take the form of a restrictive covenant, which need to be approved by the State of Michigan, or a land use ordinance.
Site boundary/ Site area (~50 acres): Groundwater that exceeds groundwater cleanup standards. Property owned by CDC Associates.	Prohibits use of land, groundwater underlying Site, and assures integrity of landfill & other RA components.	Declaration of Restrictive Covenant recorded (liber-2136, page-992) at Calhoun County recorder's office on June 21 1999, pursuant to Michigan Code R. 299.610 (e).
Site boundary/ Site area (~50 acres): Groundwater that exceeds groundwater cleanup standards. Property owned by the State of Michigan.	Prohibits use of land, groundwater underlying Site, and assures integrity of landfill & other RA components.	Planned restriction may take the form of a restrictive covenant, which need to be approved by the State of Michigan, or a land use ordinance.
Adjacent to Site/ Ground-water Use: Groundwater that is within the remedial action plume surrounding Site. Property owned by railroad and private party.	Prohibits use of groundwater associated with Site arsenic plume beyond Site boundary, and assures remedy integrity.	Informational IC- written notification to property owners. Declaration of Restrictive Covenant, pursuant to Michigan Code R. 299.610 (e) (planned).

The Site map figures 1-4 attached to this document outline the Site land boundary and groundwater arsenic plume. The maps also show the property owners for the various land parcels associated with the Site. These maps depict and describe the areas where use restrictions are appropriate until the Site remedy performance standards are met. These areas are described below.

Site Area soil and groundwater contamination: The landfill cap covers approximately 18 acres of the Site. The PRP contractor completed the cap in 1999, and the landfill erosion repair work in 2000. The Site security fence encloses an area approximately 50 acres in size, which also includes land to the west and north. The State of Michigan and CDC Associates both own portions of the landfill property, as well as additional land inside the 50 acre security fence. The ROD requires that the landfill cap remain intact in perpetuity. The groundwater is not anticipated to reach the 10 ppb arsenic cleanup standard for many years. The land parcels inside the Site security fence owned by CDC Associates are covered by a covenant stating that there shall be no use of the groundwater underlying the Property; no residential, commercial or agricultural use of the landfill cap property; no tampering with, development on, or removal of, the contaminant or monitoring systems that remain on the Property; and no use of, or activity at, the Property that may interfere with, damage, or otherwise impair the effectiveness of any response action (or component thereof) selected and/or undertaken by U.S. EPA, or any party acting as representative for EPA (See Site figures).

IC Plan: An Environmental Protection Easement and Declaration of Restrictive Covenants for the parcels of property owned by CDC Associates were executed on June 8, 1999 and recorded on June 21, 1999, with CDC Associates, Inc. listed as the Grantor and the Michigan Department of Environmental Quality (MDEQ) listed as the Grantee. U.S. EPA will be working with the PRPs and MDEQ to ensure that the current restrictive covenants are consistent with the Michigan environmental restrictive covenant statutes, case law and any available legal interpretations. If revisions to the existing restrictive covenants are necessary, U.S. EPA will work with the PRPs and MDEQ to ensure that revised restrictive covenants, if necessary, are implemented. Additionally, U.S. EPA will work with local government authorities, the PRPs, and the State of Michigan to ensure that land and groundwater use on State-owned land is adequately restricted. Such a restriction may take the form of a restrictive covenant, which would need to be approved by the State of Michigan, or a land use ordinance.

Area Adjacent to Site Groundwater and Use Restrictions: Due to the new MCL for arsenic, the groundwater plume extends south beyond the Site boundary to property owned by a railroad and a wooded area owned by a private party. The ROD states that deed restrictions or local ordinances may be implemented to restrict construction of water wells which will draw water from the arsenic plume. According to inspections made by U.S. EPA and MDEQ, and discussions with the PRPs, including the City of Albion, there are no current production wells in the plume area. The ROD also states that advisories will be issued to all property owners impacted by the arsenic plume. In compliance with the ROD, the O&M PRPs have sent notification letters to the impacted property owners. (Refer to Site figures.)

IC Plan: ICs need to be implemented on the properties south of the source property which is impacted by arsenic above the current MCL (10 ppb). U.S. EPA, MDEQ and the PRPs will work with property owners to implement a restrictive covenant or implementing a local ordinance for the properties impacted by the arsenic plume, in order to comply with the ROD requirements. If necessary, U.S. EPA, MDEQ and the PRPs will work with local authorities to discuss the enactment of local ordinances as listed in the ROD to prevent the use of groundwater impacted by the arsenic plume.

Long-term protectiveness requires compliance with effective ICs. O&M reporting must plan for long-term stewardship which includes maintaining and monitoring effective ICs including an annual certification that will be provided to EPA that effective ICs are in-place and monitored.

4.4 System Operations/Operation and Maintenance (O&M)

U.S. EPA and MDEQ's erosion concerns regarding the landfill were evident soon after RD/RA PRPs completed construction in September 1999. During Site inspections in January, February and April 2000, U.S. EPA and MDEQ documented significant landfill slope and drainage basin erosion at a number of locations. Vegetation had not been established at numerous areas and the liner was exposed at certain spots on the slope. The parties held a conference call and a U.S. EPA sent a comment letter to the RD/RA PRP contractor in April 2000 outlining the deficiencies in the landfill cover.

U.S. EPA issued a letter in June 2000 stating that the PRP group was out of compliance with the terms of the RD/RA CD, due to their failure to adequately respond to the April 2000 comment letter. In July 2000, the PRP group issued a response letter to U.S. EPA, agreeing to provide a work plan to address the Site erosion concerns. The work plan was approved in September 2000, with the landfill erosion repair work taking place in September and October of that year. A final inspection of the landfill repair work took place during May 2001.

Monitoring of the groundwater and gas probes as approved in the Site Operation & Maintenance (O&M) Plan began in October 1999. Two additional fence line gas probes and two additional groundwater monitoring wells were constructed in June 2001, after monitoring showed some concerns. The gas probes were added because elevated gas levels were recorded along the eastern fence line on two consecutive quarterly sampling events. The groundwater wells were added over concern of proper coverage of groundwater flow on the western side of the landfill.

A five year summary of the arsenic groundwater monitoring data and trend analysis was completed by Hull & Associates for the Albion Site O & M, and was included in the February 2005 Annual Report on Groundwater Quality. The information is located in Section 2.3, Appendix C, and Appendix D of the report. The arsenic data summary and trend analysis confirm natural oxidation of arsenic in groundwater was working.

A new unfiltered sampling method is planned in the future for arsenic and other metals at the Site. A new multi-year trend analysis for arsenic is also planned to take into account the new unfiltered sampling method, the 10 ppb MCL for arsenic, groundwater/ surface water

concerns, and future groundwater sampling results. The O&M reporting will also plan for long-term stewardship which includes maintaining and monitoring effective ICs, including an annual certification that will be provided to EPA that effective ICs are in-place and monitored.

Annual O&M oversight cost estimates for the Site have averaged between \$20,000 and \$30,000 since 2002. Table 1 lists cost estimates for 2005 and 2006, which include sampling, lab analysis, reporting, routine maintenance and site inspections:

Table 3. Annual System Operations/ O&M Costs		
Dates		Total Cost Estimate
From	To	
Jan. 1, 2005	Dec. 31, 2005	\$26,000
Jan. 1, 2006	Dec. 31, 2006	\$20,000

5.0 PROGRESS SINCE LAST FIVE YEAR REVIEW

This is the second five-year review for the Site. U.S. EPA completed the first five-year review in September 2002.

Table 4: Actions Taken Since the Last Five-Year Review					
Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
10 ppb Arsenic MCL	Adjust monitoring	Albion PRPs	Final 2006	Expanded plume	ongoing
Landfill maintenance	Repair erosion, burrowing, etc.	Albion PRPs	ongoing	Site inspections	ongoing
Monitoring well markings	Make sure readable	Albion PRPs	ongoing	Site inspections	ongoing
On-site building	Demolish building	Albion PRPs	ASAP	Building demolished	October 2002

The 2002 review recommended the following:

- Future groundwater monitoring data should be analyzed to account for the U.S. EPA revised arsenic MCL standard of 10 ppb.
- The minor landfill burrowing, sparse vegetation spots, slight cap road erosion and removed barb wire fencing should be repaired and periodically inspected.
- The monitoring wells/ piezometers which did not have readable markings should be identified appropriately.

- The on-site building with numerous broken windows and piled up debris should be demolished, or cleaned and boarded up.

The following issues noted during the five-year review and Site inspection period were identified and corrected by the completion of the 2002 five-year review.

- Landfill erosion repair work completed in October 2000.
- Two additional landfill gas probes were installed in 2001 on the east fence line and additional quarterly gas monitoring occurred for two years, as approved by U.S. EPA and MDEQ. Elevated landfill gas levels have not occurred since July 2000.
- Periodic Site inspections to record and deter any future potential vandalism.

U.S. EPA's revision of the arsenic MCL to 10 ppb for groundwater has produced a more extensive groundwater plume that extends beyond the south fence line of the Site boundary to the North Branch of the Kalamazoo River, as shown in the Site figures. Monitoring wells MW016SB and MW015SB, located in that vicinity, produced arsenic levels of 35.8 ppb and 10.5 ppb respectively in September 2006. These monitoring wells currently seem adequate to properly monitor the extent of the groundwater arsenic plume. Residential well RW04 along Erie Road has continually had no detectable sampling results for arsenic with a limit of 5 ppb.

The O&M PRPs conduct semiannual Site inspections and identify and repair minor landfill burrowing, sparse vegetation spots and slight cap road erosion while they are performing landfill maintenance, U.S. EPA and MDEQ periodically identify monitoring wells and piezometers with poor markings for improved identification by the PRPs. The on-site abandoned building was demolished and removed from the Site in October 2002, shortly after the completion of the 2002 five year review. No additional significant landfill erosion has occurred since the repair work was completed in 2000. Gas probe sampling at the east fence line was discontinued after two years of quarterly sampling events produced no detectable levels of methane gas and oxygen levels around the 20% range.

6.0 FIVE YEAR REVIEW PROCESS

6.1 Administrative Components

The Albion-Sheridan Landfill Site five year review report was prepared by Jeff Gore, U.S. EPA Remedial Project Manager. Mary Schafer, State Project Manager with the Michigan Department of Environmental Quality (MDEQ) assisted in the review. The five year review consisted of a Site inspection and review of relevant documents. The notice letter to MDEQ regarding initiation of the five year review was sent October 11, 2006.

6.2 Community Notification and Involvement

The completed second five year review report will be available in the Site information

repository, and the U.S. EPA website for public view. An advertisement notice regarding the five year review process was placed in the Albion Recorder newspaper for public review on June 7, 2007, and is included as an attachment to this report. No public comments regarding the five year review have been received.

Community relations ongoing at the Site include reporting on the comprehensive operation and maintenance sampling program currently being carried out to assure that human health and the environment are protected. Local residents who provide access for O&M sampling are able to ask about the Site progress at that time.

6.3 Document Review

In preparation for this five-year review report, the authors reviewed documents including:

- First Five Year Review Report, September 2002
- RD/RA Consent Decree, July 1999
- Record of Decision, March 1995
- Albion-Sheridan Landfill Site file and operations & maintenance documents
- Albion-Sheridan Landfill Institutional Controls Study, April, 2007

6.4 Data Review

The parties initiated the O&M monitoring program to provide information on potential contaminant concentrations in groundwater and air and provide landfill maintenance, in order ensure that the remedy is protective of human health and environmental standards. The parties began monitoring groundwater and fence line gas probes, as approved in the Site O&M Plan, in October 1999. After monitoring revealed some concerns, two additional fence line gas probes and two additional groundwater monitoring wells were constructed in June 2001.

The O&M Plan states that after eight consecutive samples indicating the absence of explosive gases, the parties can end the gas probe sampling program. Accordingly, gas probe sampling at the fence line continued until the end of 2002, during which time the PRP contractor monitored gas probes GP-1 through GP-7 for lower explosive limit (LEL) for methane, hydrogen sulfide (H₂S), and oxygen levels.

The landfill cap requires regular maintenance involving inspection and repair of any soil burrowing or erosion locations, and mowing of the landfill surface. The cap has not required major maintenance since the repair of the Site landfill cap in 2000 to correct and control erosion damage.

A review of the groundwater data from the December 2006 Annual Report on Groundwater Quality for the Albion Site indicate that the dissolved arsenic was reported in monitoring

wells MW-04SB at 12 ppb, MW-04SG at 10 ppb, MW-06SB at 106 ppb, MW-08SB at 5 ppb, MW-15SB at 36 ppb, and MW-16SB at 11 ppb. Michigan residential criteria were exceeded at certain locations for ammonia (10 ppm) and manganese (50 ppb) was exceeded at 52 ppb at residential well RW-04. There are no U.S. EPA primary MCLs for ammonia and manganese.

The arsenic concentrations in the groundwater continue to present the primary concern at the Site. Monitoring well MW06SB located near the southwest corner of the Site landfill has historically shown the highest levels of arsenic in the groundwater. The historic arsenic levels for this monitoring well have been as high as 164 ppb in 1999, and as low as 25 ppb in 2001. MW06SB sampling results in September 2006 produced 106 ppb arsenic in the groundwater. With the groundwater flow to the southwest and the influence of a nearby surface water stream, the revised U.S. EPA arsenic MCL to 10 ppb for groundwater has produced a groundwater plume that extends beyond the south fence line of the Site boundary to the North Branch of the Kalamazoo River. This arsenic plume includes property south of the Site owned by Norfolk & Southern Railroad and a private party. The ROD contemplates restrictive covenants or local ordinances for these properties. Monitoring wells MW016SB and MW015SB, located in these property areas, produced arsenic levels of 35.8 ppb and 10.5 ppb respectively in September 2006. These monitoring wells currently seem adequate to properly monitor the extent of the groundwater arsenic plume. Residential well RW04 along Erie Road has continually had no detectable sampling results for arsenic with a limit of 5 ppb and remains outside the arsenic plume boundary (See Site figures).

A new unfiltered sampling method is scheduled in the future for arsenic and other metals at the Site beginning in 2007. A new multi-year trend analysis for arsenic is also planned to take into account the new unfiltered sampling method, the 10 ppb MCL for arsenic, groundwater/ surface water concerns, and future groundwater sampling results.

6.5 Site Inspection

The current remedial project manager has visited the Site periodically since the last five year review in 2002. On November 13, 2006, Jeff Gore of U.S. EPA and Mary Schafer of MDEQ performed the site inspection for this five year review, and used the five year review site inspection checklist as a guideline for the Site inspection, which has been placed in the Site file and administrative record.

The site visit began with a walk around the surface of the landfill, along the Site fence line, and across Erie Road south of the Site fence line. Site access is available through a locked gate along Erie Road at the south end and through a locked gate by a field at the north end of the property.

In summary, the Site landfill was found to be in good condition during the inspection with minimal brush debris located on the cap, with the recently mowed surface grass providing the top cover. There were no signs of excessive erosion along the landfill cap, although some slight wear was noticeable along the side slopes of the cap. The Site showed no signs of any vandalism, although a small portion of the wire that lines the top of the fence along the east portion of the landfill was down and needed repair. Keys provided to U.S. EPA and MDEQ

opened both the south front access gate and the back access fence gate at the north side of the Site. The area across Erie Road where the arsenic groundwater plume extended included a railroad track and Right of Way owned by a railroad and a wooded area owned by a private party. All of the monitoring well locations were located. RW07, MW07SB and MW07SG did not have label markings on the outside of the well casings. Monitoring well 04SB looked to have settled down, as the top hinge of the casing was bent.

In addition to the concerns mentioned previously regarding deed restrictions, the issue found during the five year review inspection was:

- Monitoring wells RW07, MW07SB and MW07SG did not have labels on the casings, and another well had settled causing the top of the casing to bend.

7.0 TECHNICAL ASSESSMENT

7.1 Question A: Is the remedy functioning as intended by the decision documents?

Yes

RA Performance: The Site remedy selected in the 1995 ROD has been implemented and remains functional, operational and effective. With continued maintenance of the Site solid waste cap with flexible membrane liner, the source area remedy should contain any soil contamination and ensure that no excess human health risks develop. Gas probe sampling at the fence line continued until the end of 2002, when after eight consecutive monitoring events, the absence of explosive gases completed the gas probe sampling program, as permitted by the O&M Plan. The primary concern regarding the Site remedy is analyzing the arsenic concentrations in groundwater in light of the revised arsenic MCL of 10 ppb. Based on recent sampling results, the arsenic plume now extends south of the Site fence line to include property owned by two separate owners. The ROD requires restrictive covenants or a local ordinance preventing the use of groundwater on these properties. Two monitoring wells are sampled in these property areas south of the Site, and currently seem adequate to properly monitor the extent of the groundwater arsenic plume.

Cost of System Operations/O&M: Current annual O&M costs at the Site are primarily attributable to operation, maintenance and management of the Site, and include sampling, lab analysis, reporting, routine maintenance and inspections. Site estimated annual O&M costs for 2006 are approximately \$20,000.

Opportunities for Optimization: The lowering of the U.S. EPA MCL for drinking water from 50 ppb to 10 ppb will most likely extend the time frame needed for groundwater to meet the arsenic remedial action standard by natural attenuation. The current groundwater monitoring network seems adequate to properly monitor the groundwater arsenic plume, but adjustments to the monitoring network should be analyzed if the plume has significant changes in its location. The PRPs should continue to use groundwater modeling to support monitoring in locating the extent and nature of the arsenic plume.

Early Indicators of Potential Remedy Failure: No early indicators of potential remedy failure were noted during the review. The ROD includes a contingent remedy for groundwater treatment if residential wells became at risk of contamination. Residential well RW04 along Erie Road is sampled annually and has continually had no detectable sampling results for arsenic with a limit of 5 ppb, so the well remains outside the arsenic plume boundary. If that should change, the well should be abandoned and the residence should be provided an alternate water supply. The ROD also required a statistical evaluation to be performed on arsenic concentrations in the monitoring wells five years from the completion of the construction of the landfill cap. The statistical test was designed to determine if arsenic was declining sufficiently to fall below 50 ppb within 15 years. This statistical test was completed in the Hull & Associates February 2005 Annual Report on Groundwater Quality, and confirmed that the historic 5 year arsenic data and future trend supported the current remedy of natural oxidation of arsenic in groundwater. A new multi-year trend analysis is planned to take into account the 10 ppb MCL for arsenic.

Implementation of Institutional Controls and Other Measures: The 1995 ROD included measures implementing the use of ICs on landfill property to limit both land and groundwater use, and to limit groundwater use on adjacent property until the arsenic clean-up standard is attained. Site access and use is restricted with a security perimeter fence. The Site property is owned by both the State of Michigan and CDC Associates, and has restrictive covenants recorded against CDC Associates' property since 1999. The restrictive covenants limit land and groundwater use on the Site, and groundwater use on associated adjacent property. Incorporating the lower 10 ppb MCL, the arsenic plume now extends beyond the southern Site boundary across Erie Road to the North Branch Kalamazoo River. This property south of the Site is owned by a railroad and a private party, and there are no known recorded property restrictions regarding the groundwater south of the Site. Therefore, restrictive covenants or a local ordinance preventing the use of groundwater are planned for properties south of the Site which overlie the 10 ppb arsenic plume.

Current Use Compatibility with Land and Groundwater Use Restriction: Any use that interferes with the landfill cap would not be protective of human health and the environment. According to inspections, there is no current use of the Site landfill, and a locked perimeter fence restricts access. Land uses on adjacent parcels are not anticipated to impact the Site landfill. The solid waste landfill cap with flexible membrane liner must remain in place indefinitely to prevent exposure to underlying waste.

A restrictive covenant is in place that prohibits interference with the landfill cap and industrial use areas and prohibits use of groundwater on the source property. However, initial evaluation activities revealed that additional steps are needed to assure long-term protectiveness. Based on inspections, monitoring and interviews with city officials, there appears to be no inconsistent land and groundwater restrictions uses.

7.2 Question B: Are the assumptions used at the time of remedy selection still valid?
No.

Changes in Standards and To Be Considered: In 2006, U.S. EPA revised the arsenic MCL for drinking water from 50 ppb to 10 ppb. Other standards outlined in the 1995 ROD and 2002 Five-Year Review Report are still valid at the Site. Site ICs remain effective under the 1999 RD/RA Consent Decree.

Changes in Exposure Pathways: The revised 10 ppb MCL for arsenic has produced a groundwater plume that extends beyond the south fence line of the Site boundary to the North Branch of the Kalamazoo River. This arsenic plume underlies two parcels of property south of the Site. No other changes in the Site conditions that affect exposure pathways were identified as part of the five-year review. There are no current or known planned changes in the Site land use. The groundwater monitoring program is being analyzed to best assess the Site groundwater plume.

Changes in Risk Assessment Methodologies: Risk assessment methodologies used at the Albion-Sheridan Landfill Site since the second five-year review in 2002 have not changed, and do not call into question the protectiveness of the remedy.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy? Yes

Technical Assessment Summary

According to the data reviewed and the Site inspection, the remedy, including the implemented Site IC Environmental Protection Easement and Declaration of Restrictive Covenants, is substantially functioning as intended by the 1995 ROD. Certain parcels at the Site, owned by the State of Michigan, are not yet subject to appropriate land or groundwater use restrictions. Restrictive covenants or a local ordinance preventing the use of groundwater are planned for properties south of the Site that now overlie the arsenic plume. There is no other additional information has been identified that would call into question the protectiveness of the remedy.

8.0 ISSUES

The following concerns were identified as minor during the five year review process and the Albion-Sheridan Landfill Site inspection, and do not impact protectiveness of the remedy.

- Monitoring wells RW07, MW07SB and MW07SG did not have labels on the casings, and another well had settled causing the top of the casing to bend.

The following issues were identified during the five-year review process and the Site inspection, and may impact protectiveness of the remedy:

- A new arsenic groundwater trend and IC analysis for arsenic in groundwater is needed at the Site.
- Due to the reduction in the MCL for arsenic, the plume is now larger than U.S. EPA previously contemplated. For that reason, two properties south of the Site overlie the plume and are not subject to any restrictive covenants regarding groundwater.
- Certain parcels at the Site, owned by the State of Michigan, are not yet subject to appropriate land or groundwater use restrictions.

Table 5. Issues that may Impact Protectiveness		
Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
New arsenic groundwater trend & IC analysis for Site.	N	Y
Restrictive covenants for property south of Site impacted by arsenic plume.	N	Y
Analyze existing Site declaration of restrictions, and update if needed.	N	Y

Y=yes; N=no

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

- Put permanent labels on monitoring wells RW07, MW07SB and MW07SG, and repair cap of any damaged casing well as needed by September 2008.

Recommendations and follow-up actions for issues that were noted in Table 2:

- A new multi-year trend analysis for arsenic in the O&M Reports to take into account the new unfiltered sampling method, the 10 ppb MCL for arsenic, groundwater/surface water interface, and future groundwater sampling results will be initiated by April 2008. ICs will also be monitored annually for certification.
- Work with property owners to implement appropriate restrictive covenants restricting groundwater usage for the two impacted properties south of the Site. Alternatively, work with local government authorities if necessary to enact a local use restriction ordinance
- U.S. EPA will be working with the PRPs and MDEQ to ensure that the existing declaration of restrictions is consistent with any pertinent Michigan environmental restrictive covenant statutes, case law development and any available legal

interpretations. If revisions to the existing restrictive covenants are necessary, U.S. EPA will work with the PRPs and MDEQ to ensure that revised restrictive covenants, if necessary, are implemented. U.S. EPA will also work with local government authorities, the PRPs and the State of Michigan to ensure that land and groundwater use on State-owned property is adequately restricted. Such a restriction may take the form of a restrictive covenant, which would need to be approved by the State of Michigan, or a land use ordinance.

Table 6. Recommendations and Follow-up Actions						
Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness(Y/N)	
					Current	Future
Arsenic trend & IC analysis	New multi-year analysis based on new data & ICs.	Albion-Sheridan PRPs	USEPA MDEQ	April 2008	N	Y
Arsenic plume south of Site.	ICs for 2 property owners (restrictive covenants or ordinance).	Albion-Sheridan PRPs	USEPA, MDEQ	April 2008	N	Y
Existing Site declaration of restrictions	Analyze and update if needed for land owned by Michigan & CDC Associates	Albion-Sheridan PRPs	USEPA, MDEQ	April 2008	N	Y

Y=yes; N=no

10.0 PROTECTIVENESS STATEMENT(S)

The remedy is currently protective of human health and the environment, and the remedy is functioning as intended. There is no evidence of a cap breach and the existing use of the Albion-Sheridan Landfill Site property is consistent with the objectives of the landfill cap and land use restrictions. The groundwater remedy is currently protective of human health because there is no evidence of groundwater use in the area of the plume above the 10 ppb arsenic MCL, based on current and historic sampling of Site monitoring and residential groundwater wells. Long term protectiveness requires compliance with land and groundwater use restrictions that prohibit interference with the solid waste cap; prohibit residential, commercial or any other use that would allow the continued presence of human exposure, and restrict use of groundwater until groundwater cleanup standards are achieved throughout the plume area.

Due to the fact that in 2006 U.S. EPA finalized a revised arsenic standard, reducing the drinking water MCL from 50 ppb to 10 ppb, the arsenic plume is larger than before, and now extends beyond the southern Site boundary across Erie Road to the North Branch Kalamazoo River. Historic Site arsenic levels in groundwater are well below the groundwater surface water interface standard for the North Branch Kalamazoo River. This area south of the Site

that overlies the 10 ppb plume is comprised of a parcel owned by a railroad and a wooded area owned by a private party. Therefore, even though no known inappropriate uses of groundwater are occurring, restrictive covenants or a local ordinance preventing the use of groundwater are planned to be required for the two properties south of the Site which overlie the 10 ppb arsenic plume, to assure that the remedy continues to function as intended.

11.0 NEXT REVIEW

U.S. EPA performs statutory reviews at sites where the remedies selected result in hazardous substances, pollutants or contaminants remaining at levels above those that allow for unlimited use and unrestricted exposure. Since the Albion-Sheridan Landfill Site contains hazardous substances, pollutants or contaminants that will potentially remain above U.S. EPA and State of Michigan regulatory standards in the future, the Site will require ongoing Five Year Reviews. Therefore, another report is scheduled to be completed in 2012. The completion date of the current five year review is the signature date shown on the cover attached to the front of this report.

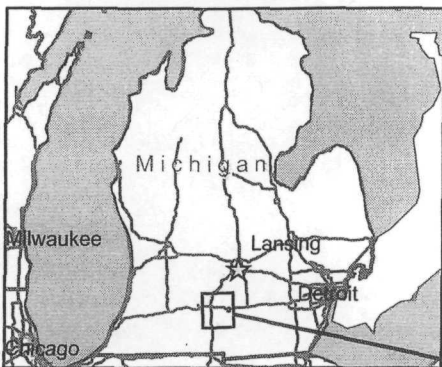
Site Location

Superfund
U.S. Environmental Protection Agency

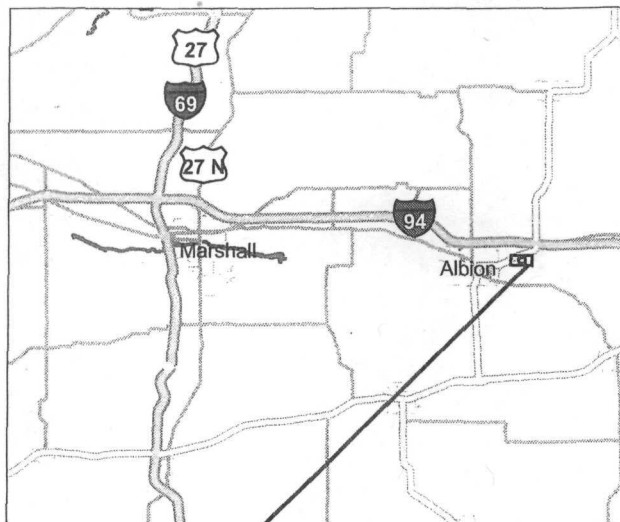


Albion-Sheridan Township Landfill Calhoun County, MI

MID980504450



State



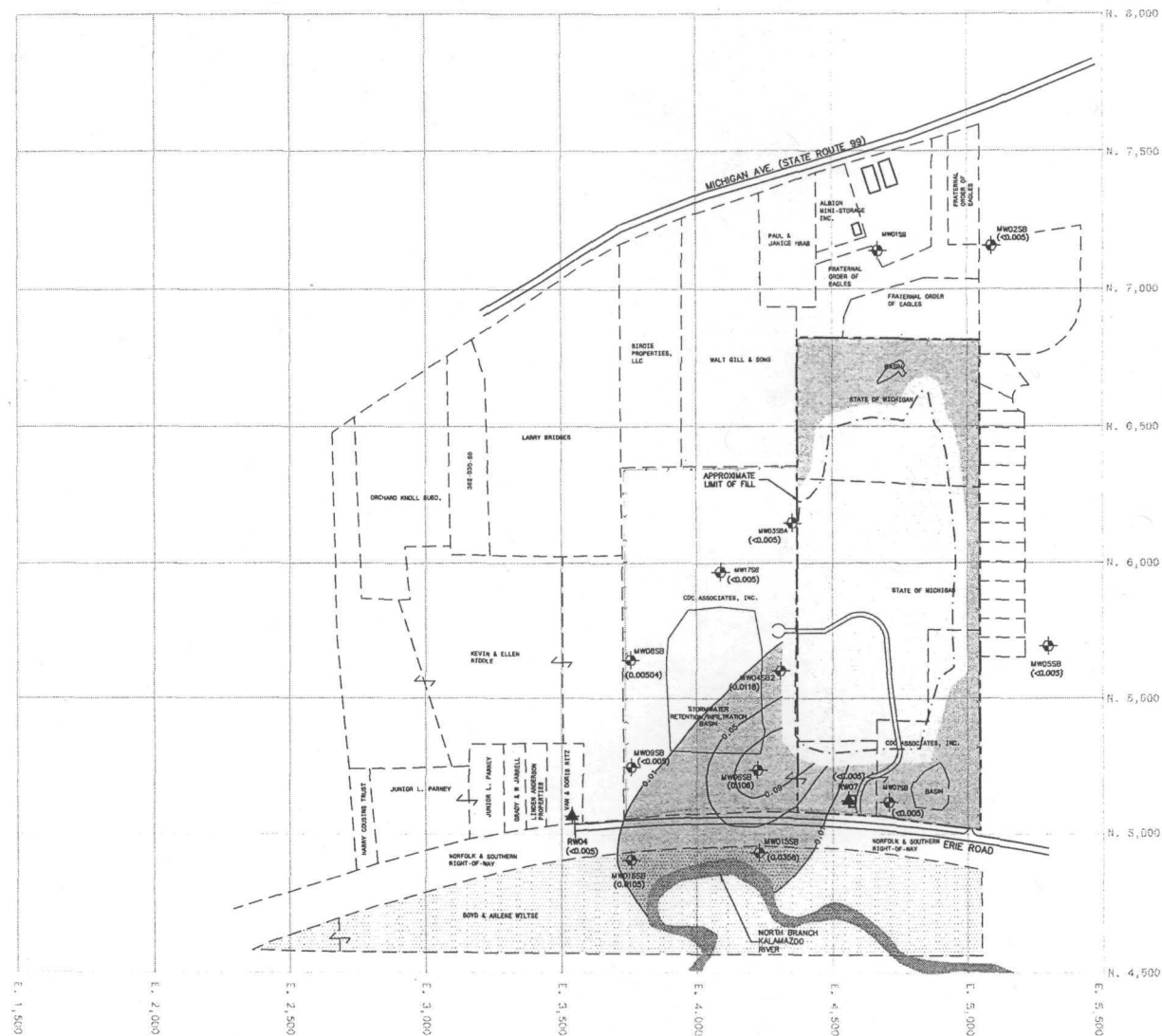
County



Site

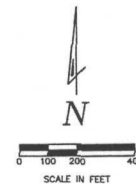
Produced by Sarah Backhouse
U.S. EPA Region 5 on 5/31/07
Image Date: 2006





- LEGEND**
- PROPERTY LINE
 - - - PARCEL LINES
 - - - APPROXIMATE LIMIT OF FILL
 - FENCE
 - MWO25B (<0.005) GROUNDWATER MONITORING WELL ARSENIC CONCENTRATION (mg/L) FROM SEPTEMBER 2006 SAMPLE EVENT
 - RWD4 RESIDENTIAL DRINKING WATER WELL
 - FLOODPLAIN
 - AREA REQUIRING INSTITUTIONAL CONTROL TO MANAGE SOIL PATHWAYS ON THE PROPERTY
 - AREA REQUIRING INSTITUTIONAL CONTROL TO MANAGE USE OF GROUNDWATER ON PROPERTY FOR POTABLE OR NON-POTABLE PURPOSES NOT ASSOCIATED WITH ENVIRONMENTAL INVESTIGATIONS OR CONSTRUCTION/MAINTENANCE ACTIVITIES
 - AREA REQUIRING INSTITUTIONAL CONTROL TO MANAGE USE OF GROUNDWATER OFF PROPERTY FOR POTABLE OR NON-POTABLE PURPOSES NOT ASSOCIATED WITH ENVIRONMENTAL INVESTIGATIONS OR CONSTRUCTION/MAINTENANCE ACTIVITIES
 - 0.05 ARSENIC CONCENTRATION CONTOURS FROM SEPTEMBER 2006 SAMPLE EVENT

NOTE:
 BASE MAP CREATED FROM WM ENGINEERING & SCIENCE REPORT DATED JULY 1994. THE OWNERSHIP OF THE CENTRAL PORTION OF THE LANDFILL IS UNCLEAR. CONFLICTING SOURCES OF INFORMATION WERE OBTAINED; ONE SOURCE NAMING ENVIRONMENTAL RESOURCE RECOVERY, INC. AS THE PROPERTY OWNER, AND THE OTHER SOURCE NAMING THE STATE OF MICHIGAN AS THE PROPERTY OWNER.



Hull & Associates, Inc. ENGINEERS GEOLOGISTS SCIENTISTS PLANNERS 2401 GLENDALE AVENUE TOLEDO, OHIO 43614 PHONE: (419) 385-2018 FAX: (419) 385-5487 www.hullinc.com	
PROJECT NO.: ALB037 LAD AND FILE: ALB037-100-0002 PLOT DATE: 1/30/07 LAYOUT BY: MC CHECK BY: SAC CHECKED BY: MC SCALE: 1"=400' SUBMITTAL DATE: JANUARY 2007 © 2007 HULL & ASSOCIATES, INC.	
SHEET TITLE: PLATE 2 ALBIN-SHERIDAN TOWNSHIP LANDFILL MAP DEPICTING WHERE INSTITUTIONAL CONTROLS ARE REQUIRED	
C-101 SHEET 1 OF 1	

Attachment 1

List of Albion-Sheridan Landfill Site Documents Reviewed for Five-Year Review Report

- *First Five-Year Review Report, September, 2002*
- *RD/RA Consent Decree, July 1999*
- *Record of Decision, March 1995*
- *Albion-Sheridan Landfill Site file and operations & maintenance documents*
- *Albion-Sheridan Landfill Institutional Controls Study, April, 2007*



**U.S. ENVIRONMENTAL PROTECTION AGENCY
Is Conducting a Second Five-Year Review of the
Albion-Sheridan Township Landfill
Superfund Site**

Albion, Michigan

U.S. Environmental Protection Agency with assistance from Michigan Department of Environmental Quality is conducting a five-year review of the cleanup at the Albion-Sheridan Township Landfill.

The cleanup included: 1) Removal, off-site treatment and disposal of drums full of waste; 2) *construction of a solid waste landfill cover with a passive gas venting system*; 3) monitoring of ground water to ensure effectiveness in lowering groundwater contaminants such as arsenic; and 4) institutional controls to limit both land and groundwater use.

This review began in October 2006. It is scheduled to be completed by September. Superfund law requires reviews of sites where cleanup is either in progress or completed but hazardous waste remains managed on-site. These five-year reviews ensure the cleanup continues to protect human health and the environment. The next five-year review for the Albion-Sheridan Landfill Site is required by 2012.

Site information can be found at: Albion Public Library
501 Superior St.

Public comment is highly encouraged. Written comments should be postmarked no later than June 21. Written or oral comments should be addressed to Cheryl Allen or Jeffrey Gore. Additional site information can be requested from the team members listed below.

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Toll free 800-621-8431, 10 a.m. to 5:30 p.m. weekdays